Do Multivitamins and Supplements Like Cocoa Flavanols Keep Cancer, Heart Disease Away?

Scientists drill down into crucial Women's Health Initiative data to get definitive answers on whether supplement use improves our health.

April 22, 2022 By Fred Hutch News Service

We all buy them, sometimes by the armload—jars and bottles of vitamins and supplements of every stripe. Pharmacies, grocery stores, even minimarts are full of them: dozens of brands, all with countless ingredients and different dosing, but all with the same promise of much-improved health.

There's only one problem: There's not that much data.

"It's a multivitamin industry with really limited data to support their use," said Garnet Anderson, PhD, director of the Public Health Sciences Division of Fred Hutchinson Cancer Research Center. "At least not here in the U.S. where we have access to high-quality foods."

Anderson said that lack of data is why she always wanted to be part of a "big trial on multivitamins." And as principal investigator of the Women's Health Initiative's Clinical Coordinating Center, or CCC, housed at the Hutch for 30 years, she and others are helping the public to better understand the risks and benefits of popular vitamins and supplements.

Fred Hutch's CCC handles the collection, management and analysis of WHI data. And Anderson has been with it since its inception, when the WHI launched with its initial $600 million from the National Institutes of Health in 1992 as a way to let research "catch up" on then-neglected women's health.

With new findings, released on a pair of WHI studies within the affiliated COSMOS trial, aimed at determining the health benefits of a common multivitamin and a supplement with cocoa flavanols—a key component of chocolate—we sat down with Anderson, holder of the Fred Hutch 40th Anniversary Endowed Chair, to get a breakdown of the latest data on these supplements and related research projects.

Results from two of the WHI's COSMOS trial studies just came out in the American Journal of

Clinical Nutrition, one on the benefits of cocoa flavanols. What did they find? Can taking cocoa supplements prevent cardiovascular disease? Is there any harm in taking them?

They're not harmful; there was no evidence of a negative effect. But we did not reach our stated goal for our primary endpoint: We saw no statistically significant reduction in cardiovascular disease with cocoa flavanol supplements, although there was some supportive data to suggest a possible benefit.

Can you break that down a little more?

When we examined total cardiovascular events together—including heart attacks, stroke, coronary revascularization, cardiovascular death, carotid artery disease, peripheral artery surgery and unstable angina—we saw a 10% reduction in the rates, but it wasn't statistically significant—we can't be confident that the 10% reduction wasn't just due to chance. That is, the rates in the active group could be the same as the control group.

But if there were a 10% reduction, that could have a public health impact. Cardiovascular disease is a major killer of the older U.S. population.

When we look at each of the individual components, none are statistically significant, but they all line up on the side of a benefit. The data are relatively cohesive suggesting a modest benefit.

Editor's note: Secondary analyses of the data showed those receiving the cocoa flavanol supplement had a nominally significant 27% reduction in death from cardiovascular disease. But, JoAnn Manson, MD, MPH, DrPH, one of the principal investigators at Brigham & Women's Hospital, emphasized in a news release that "COSMOS was not a chocolate trial," but rather a rigorous trial of a cocoa extract supplement. The levels of cocoa flavanols used in the trial were much higher than a person could ever "realistically consume from chocolate without adding excessive calories, fat and sugar to their diet," she said.

There's also a COSMOS multivitamin study, which examined whether a common multivitamin taken daily could reduce cancer, heart disease and stroke in older men and women. What happened there?

This was a follow-up to a previous Harvard trial, the Physicians Health Study II, which was trying to establish whether multivitamins had an effect on cardiovascular disease in men—they did not. That study did see intriguing results for cancer, though; using a multivitamin reduced their risk of cancer and especially the risk of a second cancer among male cancer survivors.

We thought following up with another trial that included women was a good idea to confirm and expand this finding. But we saw no cancer or cardiovascular benefit of multivitamins in this population of older Americans, men or women.

There is a reasonable question about whether the trial was long enough to see an impact on cancer, however.

Wasn't there a previous trial done at the Hutch that also showed a daily multivitamin doesn't lower risk of cancer or heart disease?

That study used observational data, comparing WHI women who reported on their multivitamin use with women who weren't taking them. That's a typical building block to help figure out what randomized trials to do. We can't do them for every single question in public health science. But you do enough to build a case.

That study, conducted by Marian Neuhouser, PhD, RD, was part of the preliminary data for COSMOS. Not much has changed with the new findings.

So not much benefit on the daily multivitamin front?

Multivitamins may help preserve cognitive function in an older population. There was a sub-study of cognitive function, COSMOS MIND, published last year. I wasn't involved in it, but they took some of the participants from COSMOS and did a telephone interviewing process that assessed cognitive function.

Cognitive function is important to all of us. It's an intriguing result and I'm sure they're going to follow up and do a bigger, stronger study. It was the most positive results of the trial.

Editor's note: COSMOS participants in this trial took a daily multivitamin and were followed for three years. Results showed a 60% slowing of cognitive aging, especially for those with cardiovascular disease. Cocoa extract supplementation did not have significant effects on participants' cognition.

So, bottom line: Some types of vitamins and supplements offer a few health benefits, but not a ton. Are they worth it? Do they do more harm than good?

We found no evidence (in this study) that they are harmful. But it's certainly an expense—people are putting a lot of money into them and maybe counting on them for health benefits that have yet to be proven.

My mother-in-law didn't like broccoli so she took a multivitamin instead. We haven't tested this, but I don't believe multivitamins are a substitute for good eating. And we're starting to see that data now.

The FDA doesn't regulate supplements the same as drugs. Is that problematic?

Don't put the blame on the Food and Drug Administration. It's Congress; they define what the FDA does, and they've defined rigorous control for drugs. But for food and nutritional supplements, all the FDA can do is work on the safety side of it which is pretty narrowly defined.

So there's little regulation and the studies don't show a huge benefit. Why do we keep taking all these spendy supplements then?

Because we think it's easier than changing our diet or our physical activity level. It would be nice if we had a pill that we could take that could protect us from disease. But it's not that easy.

Wouldn't it be cheaper and easier to just eat good nutritious food?

You would not find a single nutritionist in the world to argue with that.

You have seen harmful effects in some supplements in the past, though. Fred Hutch's CARET trial found an increased risk of lung cancer in some who took beta carotene, the compound that gives us bright yellow, orange, and red vegetables and vitamin A, right?

The CARET study (led at Fred Hutch by Drs. Gil Omenn, Gary Goodman and Mark Thornquist) was where I cut my teeth on large-scale trials. That trial showed that beta carotene and vitamin A supplements increased lung cancer incidence and death among heavy smokers or workers exposed to asbestos.

That was a big wake-up call to me, that these things that we think are good for us can be harmful.

When we use these supplements, we often use big doses. It's not just replacing carrots and other yellow vegetables with a pill. They typically multiply the dose, thinking if a little is good, then more is better. The CARET trial made us think differently about that.

What else is going on with WHI? You have a few trials still in the works, yes?

WHISPER [WHI Sleep Hypoxia Effects on Resilience] is our large-scale observational study looking at sleep and its relationship to cardiovascular disease, cancer and cognitive function. That study is done and we'll be seeing results in a few months. We're learning how important sleep is for a lot of different processes.

The WHISH trial [WHI Strong and Healthy] is looking at physical activity in older women and still has a couple of years to go. It's a really big trial, led here at the Hutch by Dr. Charles Kooperberg, and we're anxious to see what physical activity means for these women; our WHI participants are now between 72 and 105. It's a little scary to push physical activity among older adults, yet we believe movement is helpful. It's a very interesting health question: How much should we be pushing physical activity at a later age?

LILAC [Life and Longevity After Cancer] is looking at the challenges and issues that cancer survivors face in their older years. We're trying to ascertain the relationship between cancer, cancer treatment and the aging. We're looking at people's ability to function physically, cognitively—the ability to take care of yourself and to move. We want to know how much cancer treatment affects frailty.

We have more and more cancer survivors now and experts are talking about the forthcoming silver tsunami. As our population ages and the number of cancer survivors continues to go up, they are worried it is going to overwhelm the health system. Cancer and cancer treatment really

does have an effect on people, so this is a really important public health problem.

Any final thoughts on the WHI and its accomplishments?

The Women's Health Initiative shows how much women really want to learn about their health; it was driven by women and their need for better answers and it has been going strong for three decades.

We've had more than 2,000 papers published so far from WHI data and this year we are celebrating the 30th anniversary of the WHI's Clinical Coordinating Center being launched at Fred Hutch.

The WHI is really all about teamwork. We have wonderful collaborators across the country, including at Brigham and Women's Hospital who led the recent COSMOS studies. And I have a fabulous team here who have made extraordinary efforts embedding trials into our existing organization and our existing databases. Several people at the WHI Clinical Coordinating Center contributed significantly to the COSMOS studies, as well, including Lisa Johnson, Lesley Tinker, Aaron Aragaki, Rebecca Hunt, Bill Carrick, Emily Wion, Mary Pettinger and Jenny Schoenberg.

For more information on vitamins and supplements, check out the NIH Office on Dietary Supplements' fact sheets found here.

This article was originally published on April 6, 2022, by Hutch News. It is republished with permission.

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